EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Attorney J. Gordon Thomson on August 13, 2008. See attached interview summary.

The application has been amended as follows:

Please amend the claims as follows:

Claim 7:

A method for displaying the three-dimensional vector orientations of magnetic fields on a two-dimensional surface comprising the following steps:

a. establishing a sampling grid over an area of geological interest having magnetic fields;

b. locating equally-spaced measuring stations for measuring said magnetic fields on said sampling grid, wherein said measuring stations are designated by ~~the~~ letters;

c. creating a two-dimensional map of the sampling grid;

~~d. obtaining magnetic field measurements at each of said measuring stations and recording the time at which said magnetic field measurements were taken,~~

~~wherein the magnetic field measurements are represented in three dimensions as Cartesian coordinates X_a, Y_a and Z_a where "a" indicates the measuring station designation, and wherein said step of obtaining magnetic field measurements occurs over a defined period of time;~~

~~e. correcting the magnetic field measurements by applying correction means;~~

~~f. converting said Cartesian coordinates to mathematical spherical coordinates;~~

~~g. applying a color model to said mathematical spherical coordinates wherein said color model creates color hues that are representative of the magnitude and direction of said mathematical spherical coordinates representing magnetic fields at each measuring station;~~

~~h. applying said color model to said two-dimensional map thereby forming a pixilated representation of three-dimensional data to a two-dimensional format;~~

~~i.~~ d. establishing a calibration station using a stationary tri-axial magnetometer for calibrating said magnetic ~~properties~~ fields, wherein said calibration station is located proximate to said sampling grid, and further wherein the calibration station is located in a magnetically ~~quite~~ quiet area;

~~j.~~ e. conducting a calibration step at the calibration station, wherein said calibration step comprises the steps of:

i. obtaining a first measurement of ~~the measuring~~ the magnetic field in X, Y and Z directions using said stationary tri-axial magnetometer;

ii. obtaining a second measurement of the magnetic field in X, Y and Z directions using an operator held portable tri-axial magnetometer;

iii. determining the effect of said operator holding the portable tri-axial magnetometer on said second measurement; and[,]

iv. calibrating said effect to the portable tri-axial magnetometer so that the effect of the operator is nullified;

~~j.~~ f. conducting a survey step of obtaining magnetic field measurements at each of said measuring ~~station~~ stations using ~~a~~ said portable tri-axial magnetometer and recording the time at which said magnetic field measurements were taken, wherein the magnetic field measurements are represented in three dimensions as Cartesian coordinates X_a, Y_a and Z_a where "a" indicates the measuring station designation, and wherein said survey step occurs over a period of time;

~~k.~~ g. measuring the magnetic field at the calibration station over said period of time and determining an average magnetic field measurement over the period of time in order to obtain a calibration value corresponding to the time that the magnetic field measurements are made;

~~l.~~ h. correcting the magnetic field measurements by subtracting said calibration value in order to obtain a calibrated value for each of the magnetic field measurements $X_{calibrated,}$ $Y_{calibrated}$ and $Z_{calibrated}$;

~~m.~~ i. correcting said calibrated value for each of the magnetic field measurements by subtracting the value of the magnetic field of the earth at each measuring station to obtain a residual value for each magnetic field measurement $X_{residual,}$ $Y_{residual}$ and $Z_{residual}$[;], wherein said value of the magnetic field of the earth is determined by applying the International Geomagnetic Reference Field; and[,]

~~n.~~ j. correcting said residual value by subtracting the values of induced magnetic fields to obtain a ~~remnant~~ remanent value for each magnetic field measurement ~~$X_{remnant,}$ $Y_{remnant}$ and $Z_{remnant}$~~ $X_{remanent,}$ $Y_{remanent}$ and $Z_{remanent}$.

Claim 16:

The method of claim 7 comprising the further step of transferring Cartesian ~~remnant~~ remanent values to mathematical spherical coordinates r_{math}, $theta_{math}$ and phi_{math}.

Claim 18:

The method of claim 17 further comprising the step of applying a color notation model to each of said geological coordinates wherein said color notation has a direct symmetry to the geological coordinates and so that a unique color hue represents a specific value and direction of a three dimensional vector obtained at each of the measuring ~~station~~ stations, and further wherein said specific value and direction of the three dimensional vector representing a measuring station is shown as a colored pixel.

Please amend the specification as follows:

Page 10 lines 18-20:

Figures 11, 11a and 11b illustrate an endowment of this methodology that shows how a range of vector orientations may be sectored out and given higher visual discrimination to further ~~emphasis~~ emphasize subtle changes in vector orientation.

Page 20 lines 5-20:

With the advent of computer processing capabilities, the unique display of this vector orientation data lends itself to a number of useful statistical presentations. In Figure 10 we see that an area of the colour coded data grid area can be selected ~~(Figure 10a)~~ (Figure 10) and the orientation of all vectors within this area can be plotted on an orthogonal grid as a function of dip angle versus Azimuth ~~(Figure 10b)~~ (Figure 10a). This can allow for the fine cognitive discrimination of very subtle orientation regimes.

Figure 11 shows another attribute of this vector orientation presentation, which allows for the enhanced discretion of specific selected orientation. In this scenario a specific range of dip and azimuth angles are selected. This selection is illustrated in the highlighted quadrant of the sphere (Figure 11a) or the rectangular area expressed on the orthogonal dip verses azimuth plot (Figure 11b). A new colour chart is then created that contains the full complement of colours as the original model ~~(Figure 11c)~~ (Figure 13). The appropriate cells that contain the dip and azimuth values within this range are displayed on the plan view of the grid area utilizing the full gamut of colours available.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Yungul (US 3,965,413) describes a system and method for determining the polarity of remanent magnetization of an earth formation penetrated by a bore hole using a highly accurate magnetometer followed by processing of resulting as well as associated data.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL WASHBURN whose telephone number is (571)272-5551. The examiner can normally be reached on Monday through Friday 8:30 a.m. to 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ulka Chauhan can be reached on (571) 272-7782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ulka Chauhan/
Supervisory Patent Examiner, Art Unit 2628

/Dan Washburn/
Examiner, Art Unit 2628
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